

PICTURE OF THE MONTH

Radar Presentation of Well-Defined Line Echoes Associated With a Cold Front

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Figure 1 shows the location of line echoes associated with a cold front at 1430 GMT on Nov. 19, 1969, on the 125-n.mi. radarscope. The line was moving eastward at 30 kt. All echoes in the line were of moderate intensity or less, and the maximum top was 20,000 ft. This 10-mi-wide north-south line can be identified for a distance of about 160 n.mi. in length on the radarscope. It must be noted that all cold fronts are not as clearly defined as this one. An area of light rain can be seen to the east of Pittsburgh. The weather behind the front is not clearly shown because of attenuation (6 decibels), but an area of snow can be identified. The two short lines southeast of Pittsburgh are mountain ranges.

The surface analysis by the National Meteorological Center at 1500 GMT indicated a closed low-pressure area had formed on the front in the vicinity of Erie, Pa. Figure 2, the 1200 GMT 500-mb analysis, shows a deep trough to the west of Pittsburgh.

At the time of frontal passage through Youngstown, Ohio, there was a 10°F drop of temperature in a 7-min period. Some minor wind damage was reported a few miles south of Youngstown.

At the Pittsburgh Weather Bureau Office, the following events took place:

1) Wind:

- 1635 GMT—wind shift from 180° to 290°,
- 1635 GMT—peak wind gust of 52 mi hr⁻¹, and
- 1640 GMT—fastest 1-min wind speed of 45 mi hr⁻¹.

2) Sea-level pressure converted to millibars (fig. 3 shows barogram trace in inches):

- 1425 GMT—1003.3 mb, pressure falling rapidly,
- 1556 GMT—999.9 mb, lowest pressure recorded, and
- 1656 GMT—1004.4 mb, pressure rising rapidly.

3) Temperature:

- 1556 GMT—58°F,
- 1656 GMT—47°, and
- 1855 GMT—35°.

4) Weather:

- 1630 GMT to 1755 GMT—light and moderate rain,
- 1755 GMT to 1825 GMT—rain and snow mixed, and
- 1825 GMT to 2245 GMT—snow.

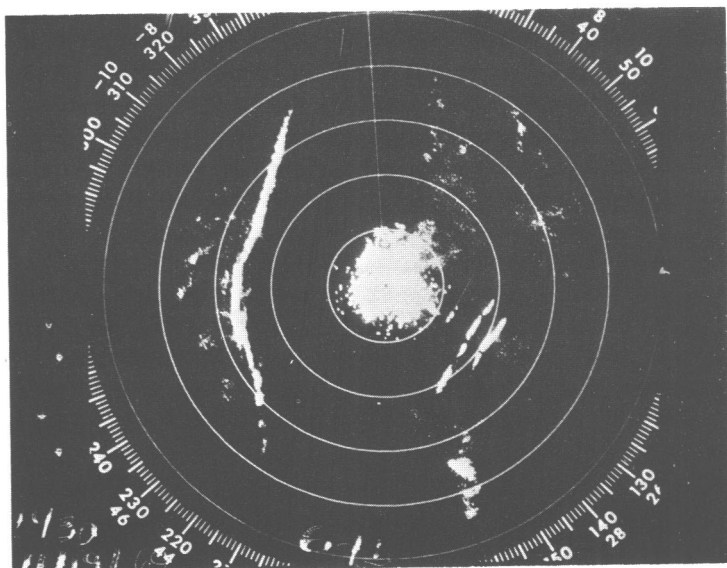


FIGURE 1.—WBMO Pittsburgh, Pa., WSR-57M radarscope at 1430 GMT on Nov. 19, 1969. Range circles are 25-n.mi.-interval Polaroid type-42 film, aperture setting f8, long pulse, STC off, Lin receiver, and 6 decibels attenuation.

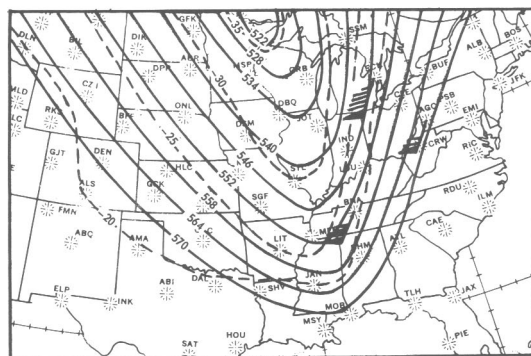


FIGURE 2.—The 500-mb analysis at 1200 GMT on Nov. 19, 1969 (contours in decameters, isotherms in degrees Celsius). A north-south cold front is located over central Ohio.

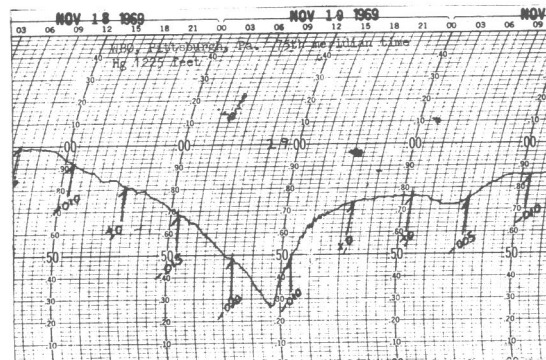


FIGURE 3.—WBO Pittsburgh, Pa., barogram trace, 75th meridian time (height 1,225 ft; units of pressure in inches).

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